

One Health Center's Response to the Obesity Epidemic:

An Overview of Three Innovative, Culturally Appropriate, Community-Based Strategies

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Introduction

Recent reports on the obesity epidemic have delivered staggering nationwide statistics. Hawaii is not exempt from this trend, with Native Hawaiians having among the highest obesity prevalence rates in the nation. Much research has been and is continuing to be done in an effort to mitigate this formidable threat to our nation's health. The consensus originating from this research suggests that the most successful obesity intervention strategy incorporates a community-based multi-disciplinary program with low fat diet, exercise, and behavior therapy^{1,2}.

The Waianae Coast Comprehensive Health Center (WCCHC), largest provider of primary healthcare to low income Native Hawaiians in the State of Hawaii, has a rich and varied past of putting these guidelines into action. In line with its mission statement "to make available to all residents of the Waianae District complete comprehensive health and related human services," WCCHC continues to seek out ways to implement various innovative programs in order to meet the needs of its community. This paper will touch on the scope of the obesity epidemic and then explore three of WCCHC's present programs developed in response to this epidemic: the Lifestyle Enhancement Program (LEP), KidFit, and the Hawaii Community Resource Obesity Project (HCROP). Through these programs, WCCHC endeavors to restore the health of its overweight population while preventing this problem from taking hold in the next generation. Each program is community-based, multi-focal, and founded on the basic principles of diet and exercise. Preliminary results suggest that this model is successful in helping patients initiate and maintain weight loss.

Outlining the Obesity Epidemic

Obesity, defined as a Body Mass Index (BMI) of 30 or more, is the second highest cause of preventable death in the United States³. The latest numbers from the National Health and Nutrition Examination Survey (NHANES) rank overweight (BMI 25.0-29.9) preva-

lence in the US adult population at 65.7%, obesity at 30.6%, and morbid obesity (BMI ≥ 40.0) at 5.1%. Among the US pediatric population, 31% are at risk for being overweight or obese and 16% are overweight⁴. Obesity has increased across all educational levels, races, ages, and genders^{5,6}. In 1991, no state had an obesity prevalence rate of $\geq 20\%$; in 2001, 37 states had a prevalence of $\geq 20\%$ ⁷.

The economic burden of obesity is substantial. In 2000, roughly 10% of the total US healthcare expenditure, or \$117 billion, was spent on obesity and weight-related problems⁸. In the 6-17 year old pediatric population, obesity-related hospital costs increased from \$35 million in 1979-1981 to \$127 million in 1997-1999⁹. In Hawaii, the estimated cost of obesity-associated chronic disease (Healthy Hawaii Initiative, Hawaii Department of Health, 2000) is \$470.8 million for diabetes, \$105.6 million for physical inactivity, and \$880.0 million for diet-related chronic conditions such as cardiovascular disease, cancer, and diabetes¹⁰⁻¹³.

It is well-known that these prohibitive costs are related to the fact that obesity contributes to a host of diseases. Type 2 diabetes, an especially prevalent disease affecting an estimated 10% of the US population, is both contributed to and complicated by obesity^{14,15}. The next generation shows signs of continuing in this direction, with an estimated one in four US children and youth being obese and 25% exhibiting signs of impaired glucose tolerance¹⁶. As with adults, obesity increases the likelihood of hyperlipidemia and hypertension among the pediatric population. An added adverse effect of childhood obesity, one that cannot be quantified in dollars, is the discrimination these individuals often face¹⁷.

Native Hawaiians, along with Pima Indians, Samoans, and Nauruans, have among the highest obesity prevalence rates in the nation¹⁸⁻²¹ and the highest obesity and diabetes prevalence rates in the State of Hawaii²². In 2002, 38% of Native Hawaiians self-reported being overweight (compared with 36% of

the general population in Hawaii) and 37.5% reported being obese (compared with 17% of the general population)²³. According to the 2003 Hawaii Health Survey of the Office of Health Status Monitoring, 69.3% of Hawaiians are overweight in contrast to 51.9% for all other ethnicities²⁴. Obesity prevalence rates among Native Hawaiians have been estimated as high as 65%²⁵. A five-year study in a school district on the island of Molokai revealed an obesity prevalence rate of 22% among the children there-double the rates in NHANES III²⁶. The prevalence of type 2 diabetes in children and adolescents appears to be on the upswing concomitant to the rapid increase of obesity. An additional study on Molokai verified a link among obesity, type 2 diabetes and early cardiovascular disease among Native Hawaiian adults²⁷. The Bogalusa Heart Study likewise validated this relationship among children and adolescents²⁸⁻³⁰.

The Waianae Coast Comprehensive Health Center's (WCCHC) Response

Patient Demographics:

Located within a medically underserved area on the West Coast of Oahu, WCCHC services the most Native Hawaiians in the State of Hawaii. Waianae has the highest percentage of Hawaiian/Part Hawaiians (41%) and the youngest population in the State³¹. During calendar year 2003, 23,943 individuals sought medical care at WCCHC. Of these, 77% were Asian Pacific Islander (51% Native Hawaiian ethnicity) and 65% were <100% of poverty level.

The most recent WCCHC user data, collected from 10/2003 to 9/2004 lists the average BMI of patients eighteen years and older at 31.4. When broken down by ethnicity, Samoans had the highest average BMI at 37.0, and Hawaiian/Part Hawaiians were next at 33.2.

Facilities:

WCCHC has invested much of its resources in creating an atmosphere conducive to a holistic approach to health. The newly constructed Dining Pavilion features affordable daily menus designed with fresh produce grown by local farmers and on the WCCHC grounds. The Dining Pavilion also hosts health presentations, food demonstrations, and serves as a community meeting place. Gardens filled with herbs, vegetables, and Native Hawaiian plants are interspersed among numerous fruit and shade trees. Walking paths wind through these groves and gardens and then meander up the mountainside for those who want a more serious hike. An outdoor amphitheater provides a venue for large presentations and outdoor exercise classes.

A new Wellness Center is being constructed beneath the Dining Pavilion. This new facility will house exam rooms/offices, consultation rooms, a large gym, conference room, research library, and outdoor exercising area. The Wellness Center's close proximity to the Dining Pavilion will enable patients to meet with the weight management health care team to learn about healthy eating, and then go directly to the pavilion to eat/purchase the foods discussed at the health care appointment. At present, the Wellness Center is located on the lower campus of WCCHC and includes offices equipped with both traditional and complementary supplies (such as a massage table, acupuncture tools, and nutrition monitoring devices). A comfortable reception area leads to a gym which contains ten Free Motion weight machines, treadmills, stationary bicycles, a stair-master, and other aerobic exercise supplies.

Three Innovative Programs:

In order to address the issue of obesity in its patient population, WCCHC has implemented the Lifestyle Enhancement Program (LEP), KidFit, and the Hawaii Community Resource Obesity Project (HCROP). LEP combines counseling by nutritionists and physicians, fitness training, and behavioral therapy to create individualized weight management programs. KidFit is a biweekly fitness and nutrition program that targets school-aged children and youth. And HCROP is a three-pronged research project focused on expanding production of healthy agricultural products, increasing availability of healthy foods, and reducing the prevalence of obesity. Each program has been designed to be culturally appropriate and tailor-made for its target participatory group. Although the approaches differ, the net result is a synergistic effort to create a healthier community population.

Lifestyle Enhancement Program (LEP):

The causes of obesity are multi-faceted, and therefore the treatment must be multi-faceted as well³³. Even

Table 1.— WCCHC Adult Population BMIs vs. 2002 NHANES Data		
BMI	WCCHC %	NHANES %
>30 (Obese)	over 55%	30.6%
>40 (Morbidly obese)	38%	5.1%

Table 2.— WCCHC Pediatric Population BMIs vs. 2002 NHANES Data		
BMI	WCCHC %	NHANES %
> or = 95th % by growth chart (Overweight)	26.9%	16%

Peak prevalence of overweight youth at WCCHC is in the 14-15 year old age bracket, with 32.9% presenting as overweight. A disturbing trend is apparent in the 6-7 year old age group, where 27.3% are overweight³². These numbers indicate that excess weight gain often begins young in the WCCHC population and remains a problem throughout adulthood.

though diet and exercise constitute the foundation of every successful weight management program, studies have revealed that most of those who are trying to lose weight are not meeting the recommended daily calorie intakes and sustained physical activity levels³⁴⁻³⁶. In fact, a recent four-year study estimated that common weight loss strategies such as increased exercise and decreased caloric consumption were only used 20% of the time³⁶. A separate study showed that a mere one third of the sample size trying to lose weight reported consuming fewer calories and increasing activity levels³⁷.

Modern technology and conveniences combined with busy lifestyles that leave little time for leisure physical activity are factors that contribute to the fact that only 22% of Americans exercise on a regular basis³⁸. In addition to diet and exercise, behavioral therapy has been shown to be a critical component of obesity treatment and long-term weight maintenance⁴⁰⁻⁴². The definition of behavior therapy applied to obesity treatment has evolved over the years into a "broader approach characterized by systematic manipulation of all factors associated with eating and exercise patterns"⁴³. Finally, the concept of cultural competency must not be overlooked. Respecting and acknowledging the patient's culture facilitates communication and enhances therapeutic outcomes⁴⁴.

WCCHC's LEP was developed with these factors in mind. The approach is multi-focal, holistic, and blends traditional medicine with complementary healing methods. The emphasis is on consistency: small changes over time for permanent results. A complete medical work-up, including a physical exam, appropriate laboratory tests, and comprehensive personal/family medical history, is conducted at the initial visit. Studies have shown that although less than half of obese patients reported being advised to lose weight by their doctors, physicians' weight loss counseling significantly contributed to weight loss attempts^{45,46}. "Medicalizing" the patient's obesity, or helping the individual to recognize the excess weight as a problem detrimental to optimal health, has been shown to enhance weight loss motivation⁴⁷. Acknowledging the existence of the problem is at the core of any self-help program.

The patient receives individualized evaluations by a registered dietitian, a fitness trainer, and a behavioral therapist. The respective health professionals participate in on-going collaboration to develop tailor-made treatment plans based upon the participant's co-morbid conditions, desires, motivation, health status, and support structures. Upon enrollment in the LEP, patients receive access to all the services offered at LEP. For example, they may exercise at the LEP gym or walk the garden paths, participate in various traditional Hawaiian healing services, or grab a healthy lunch at the Dining Pavilion. Participants

are also invited to attend a weekly weight loss support group meeting. The end result is an "individualized approach based on each patient's specific health risks and habits, using various resources...encouraging and empowering patients to become active participants in their weight-loss"; an approach that promotes healthy and successful weight loss⁴⁸.

The LEP has shown preliminary effectiveness in dealing with obesity in the clinic population, especially among high utilizers, and has great potential in helping individuals sustain weight over time. A series of medical chart audits conducted among active participants (defined as those attending the LEP for three or more visits) revealed that the majority lost weight. Weight loss among LEP participants averaged 18.8 pounds during Year One and 22 pounds during Year Two. Weight loss ranged from 5 to 70 pounds.

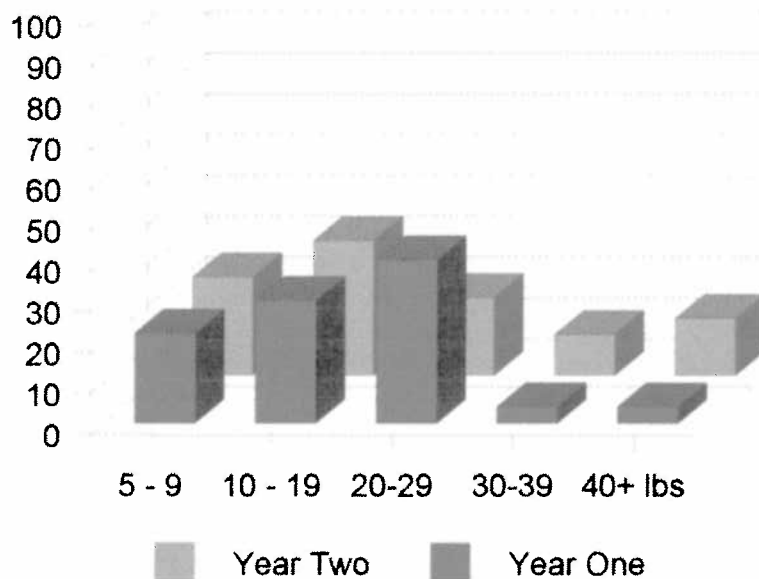
Table 3.— Initial and 6-Month Weight Loss Among LEP Participants

Group	Population	% weight loss	% weight loss at 6 months
Year One	75 patients	53% (40 patients)	58% (23 of 40)
Year Two	53 patients	66% (35 patients)*	66% (21 of 32)**

* Of the remaining 34% who originally gained weight, 7 of 16 (44%) showed weight loss at six months.

**Nine per cent of the patients (5 of 53) were lost to follow up.

Table 4.— Range of Weight Loss at Six Months for LEP Participants



Patients participating in the LEP are recruited from three sources. The first source is referrals generated from within WCCHC from primary care providers (PCPs) who see the general population of patients and

refer those who have nutrition-related health conditions. During Year One, 178 patients were referred to the LEP in this manner. One hundred percent of those who participated in this first cohort were referred by WCCHC PCPs. The second source is self-referrals from the general public and the third are those who are referred by non-WCCHC MDs. The second cohort of LEP patients was comprised of 2-3% outside MD referrals, 10% self-referrals, and the remainder WCCHC PCP referrals.

It is important to note that co-morbidities were not taken into account at the time of data collection. Therefore, patients with congestive heart failure, renal disease, hypertension, or other conditions in which weight may vary secondary to fluctuations in fluid balance have been included in the denominator. Likewise, an estimated 75% of LEP patients present with behavioral health conditions, primarily depression and/or anxiety disorders, which additionally impact weight loss outcomes. The denominator includes these individuals as well.

Long-term results of many weight loss programs are often discouraging, with high rates of weight regain. The general assumption has been that sustained weight loss averages 5% at 6 months post-program. LEP's 58% sustained weight loss at 6 months far exceeds this national estimate. Studies have shown that weight loss is more likely to be maintained if the loss is gradual, moderate, and stems from a change to healthy lifestyle habits^{49,50}. Ongoing participation in a program consisting of diet therapy, fitness training, and behavioral therapy has also been associated with the likelihood of weight loss maintenance⁵¹. LEP provides patients with the opportunity to experience a gradual lifestyle change with continuing support from the lifestyle team. Similar clinic-based, lifestyle modification programs have shown sustained weight loss, increased cardiorespiratory fitness, and improved lipid profiles among their participants⁵².

KidFit:

KidFit, a newly implemented program, was developed in response to teen comments at a series of focus groups centered on weight management among teens. The purpose of the groups was to ascertain precisely what type of weight management activities the youth would participate in. The questions asked were:

- what activities they liked doing
- how often they would like to come to a fitness program
- what were the best times
- if they preferred individual or group activities
- did they need transportation
- preference of a male or female fitness trainer
- what kind of music they like to exercise to
- did they want to meet with the wellness team or only fitness trainers
- what special activities did they enjoy

The youth were adamant in their responses. They preferred fitness activities over visits with the nutritionist, physician, or behavioral therapist. They ranked specific fitness activities in order of preference, with weight training/use of fitness machines at the top of the list. Following weight training, the youth ranked their preferences as follows: team sports activities, kick-boxing, hiking, and water sports.

Based upon these responses, the biweekly KidFit program was created. KidFit offers half hour weight training sessions followed by half hour rotated activities such as kickboxing, hip hop, walking, basketball drills, volleyball drills, and soccer drills. Since both lead trainers are registered dietitians, nutrition/healthy eating and healthy substitutes for high fat snacks are subtly integrated throughout the program. Clinical monitoring, including weight, height, blood pressure, pulse, body fat, and girth measurements, are performed on each client prior to the fitness sessions.

KidFit was well attended when it began last summer, but due to conflicting school schedules and transportation issues the attrition rate has been quite high. Even so, a small core group of those who consistently participate in the weekly activities has emerged. Together since the program's inception, these individuals have formed a special bond and help to encourage each other as they strive for healthier lifestyles. This group has recruited new KidFit members through word-of-mouth recommendations and publicizing the program at community events.

Preliminary results indicate that KidFit is having a positive impact. During the period of May through October 2004, weight, girth, and body fat measurements were obtained for those individuals with three or more visits. Weight was recorded at each visit, and girth and body fat were monitored at least twice dur-

Table 5.— Weight Loss Among KidFit Participants

Population	% weight loss	Weight unchanged	% weight gain
36 Patients	33% (12 of 36)	3% (1 of 36)	64% (23 of 36)*

* It is important to note that four of these individuals (17%) also increased height measurements during this time period.

Table 6.— Girth Changes Among KidFit Participants

Population	% girth decrease	Girth unchanged	% girth increase
11 Patients	64% (7 of 11)	9% (1 of 11)	27% (3 of 11)

Table 7.— Body Fat Changes Among KidFit Participants

Population	% body fat decrease	Body fat unchanged	% body fat increase
8 Patients*	75% (6 of 8)	12.5% (1 of 8)	12.5% (1 of 8)

* Sample size for girth and body fat is small partly due to the changeover to electronic medical records. Data is currently difficult to obtain since some providers are charting on the old paper charts and others on the new electronic system.

ing this six-month period. The majority of participants experienced decreased girth and body fat.

Hawaii Community Resource Obesity Project (HCROP):

This project was made possible by a generous grant from the United States Department of Agriculture (USDA). The goal of this program is to reduce the rate of obesity among Native Hawaiians through the development of a community-based agricultural/health network. This network will provide a link to the LEP with community agriculture and aquaculture, thereby augmenting the availability of healthy foods and improving the socioeconomic viability of the community. Literature suggests two factors that pose a significant obstacle to the maintenance of long-term weight control: easily available fast foods and the lack of readily available "healthy" foods, especially prepared healthy foods^{53,54}. As fast-food chains make "super-sizing" economically more attractive to individuals struggling to control their weight, nutritious healthy products are less available and more expensive. HCROP seeks to bring together food producers, food consumers, and food vendors in an effort to create a system that is focused on the health of the community.

Currently in its infant stages, this four-year project proposes to knit together community producers, distributors, and consumers by first educating the producers. Through regular community network meetings, local farmers and fishermen will be shown sustainable, ecologically-friendly methods. Backyard aquaculture will be expanded for further economic self-sustainability. This will give area supermarkets more sources for locally produced goods. The WCCHC's Dining Pavilion will also play a critical role in the sale of prepared, value-added, locally-produced food products. Healthy food messages will be developed and publicized throughout the community via community presentations, fliers, newspaper articles, and word of mouth. A series of two day, healthy diet programs will target the community's obese Native Hawaiian population. The menus will be comprised of locally grown and produced food, and participants will be invited to enroll in WCCHC's LEP upon completion of the diet program.

Conclusion

The Surgeon General's recently dispatched call to action challenged America to unite in a common effort to seek out the root causes of obesity and develop effective, culturally appropriate interventions⁵⁵. Experts agree that "innovative strategies to reduce obesity prevalence rates, particularly among minority populations who suffer a vast range of health risks leading to disparities in health outcomes, are sorely needed"⁵⁶. The Native Hawaiian population, with its high obesity prevalence rates, is one of these minority populations in dire need of innovative, culturally appropriate interventions.

Drawing from lessons learned during the long history of working with its predominantly Native Hawaiian community, the WCCHC developed three culturally appropriate programs that provide inventive, practical methods for weight loss. The LEP has shown promising preliminary results with its holistic, multi-focal approach. KidFit endeavors to instill healthy lifestyle habits in the next generation, and the HCROP lays the infrastructure for a self-sufficiently healthy community. Together, these three programs work in symbiosis to begin the process of health restoration in the Native Hawaiian community.

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